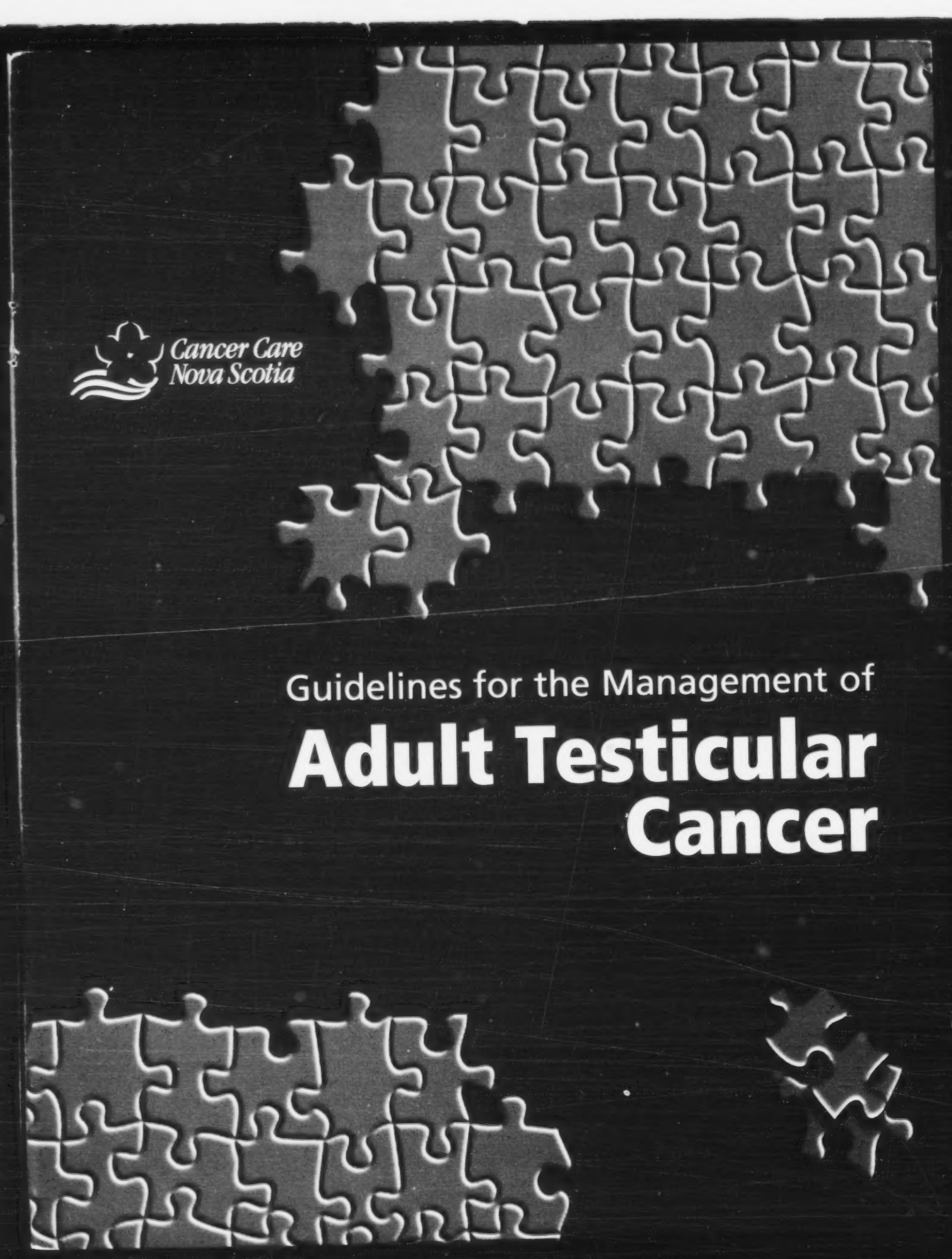

Guidelines for the Management of

Adult Testicular Cancer

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Guidelines for the Management of

Adult Testicular Cancer

Guidelines for the Management of Adult Testicular Cancer

Objective:

This guideline reviews the overall management (from initial presentation and diagnosis through referral, treatment and follow up) of adult testicular cancer in Nova Scotia. The guidelines are primarily designed for specialists treating testes cancer in Nova Scotia.

Other interested physicians (especially family physicians) and health professionals may find the algorithms a useful summary of the management of testes cancer. Patients, family members and other non-health professionals are encouraged to review materials written specifically for them. The Canadian Cancer Society Information Service (1-888-939-3333 or www.cancer.ca) is one source for this type of information.

Preamble Note:

Practice guidelines are intended to assist health care professionals with decisions throughout the spectrum of the cancer experience. Guidelines should never replace specific decisions for individual patients, and do not substitute for the shared decisions between any patient and doctor (or other health professional) which are unique to each circumstance. However, guidelines do provide evidence-based background information, consensus-based recommendations for similar problems, and a context for each individual decision. This guideline will be revised, from time to time, as new evidence becomes available. Current versions of this guideline will be available on the *Cancer Care Nova Scotia* website (www.cancercare.ns.ca).

Comment on Clinical Trials:

An important component of treatment decision-making for any patient is the potential for enrollment in a relevant clinical trial. The Genitourinary Cancer Site Team is committed to advancing patient care, through participation in clinical trials. At any point in time, there may be a clinical trial opportunity for any component of this guideline. As specific trials become available, eligible patients may be offered the opportunity to enroll in the relevant trial. Every effort will be made to accommodate patients for clinical trial participation, but there will be eligibility restrictions for each trial. Patients are encouraged to discuss clinical trials opportunities with their cancer specialist. Current clinical trials will be listed on the *Cancer Care Nova Scotia* website (www.cancercare.ns.ca).

Acknowledgements:

This guideline was written by a collaborative effort of the Genitourinary Cancer Site Team, and was sponsored by *Cancer Care Nova Scotia*. Portions of this practice guideline have been adapted from guidelines prepared by the London Regional Cancer Centre (Aug 2001), and the British Columbia Cancer Agency (Jan 2000). The guidelines also incorporate knowledge of current evidence by the cancer experts in Nova Scotia.

For further information on this, or any other Practice Guideline, please contact the CST Co-Chairs, or members of the Guidelines Resource Team, *Cancer Care Nova Scotia* (contact person Michele Moore, Tel. (902) 473-3152 or by e-mail michele.moore@ccns.nshealth.ca)

Guideline Approvals:

Genitourinary Cancer Site Team-

- Initial date approved- 11 October 2002
- Revision with Community Reviewer Input- 26 May 2003

Cancer Care Nova Scotia, Commissioner

- 08 July 2003

Guidelines for the Management of Adult Testicular Cancer

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Part 1. Introduction

1.1 Risk Factors

Certain individuals are at higher risk of testis tumours, e.g. history of a delayed or undescended testis, patients who have had a prior malignancy in the contralateral testicle, and possibly those with an affected first degree relative (especially an identical twin). Testicular self-examination may be a method of early detection for testicular cancer, especially in high risk individuals.

1.2 Presentation

Men may present with pain, acute swelling and/or hardness of the testicle or with a painless mass or swelling of the testicle. In rare cases, there may be simultaneous bilateral tumours. Spread occurs by either vascular or lymphatic routes. Metastatic disease leads to presenting complaints in approximately 15% of cases with testicular tumours. This will lead to symptoms specific to the affected organ or adjacent tissues. Patients may develop gynecomastia due to elevation of ßhCG (germ cell tumours), and other hormonal functional elements may be present (stromal tumours).

Part 2. Histology & Pathology

2.1 Histology

The Modified World Health Organization Histologic Classification of Testicular Tumours is used for histologic classification at the QEII Health Sciences Centre- Cancer Care Program.

Germ cell tumours

- Precursor lesion
  - Intratubular germ cell neoplasm, unclassified
- Tumours of one histological type
  - Seminoma
    - Variant: seminoma with syncytiotrophoblastic cells
  - Spermatocytic seminoma
    - Variant: spermatocytic seminoma with a sarcomatous component
  - Embryonal carcinoma
  - Yolk sac tumour
  - Choriocarcinoma
    - Variant: monophasic type
  - Placental site trophoblastic tumour
  - Teratoma
    - Mature
    - Immature
    - With a secondary malignant component
    - Monodermal variants
      - Carcinoid
      - Primitive neuroectodermal tumour
- Tumours of more than one histologic type
  - Mixed germ cell tumour (specify components; estimate percentage)
  - Polyembryoma
  - Diffuse embryoma

Sex cord-stromal tumours

- Leydig cell tumour
- Sertoli cell tumour
  - Variant: large cell calcifying Sertoli cell tumour
  - Variant: sclerosing Sertoli cell tumour
- Granulosa cell tumour
  - Adult type
  - Juvenile type
- Mixed and indeterminate (unclassified) sex cord stromal tumour

Mixed germ cell-sex cord-stromal tumours

- Gonadoblastoma
- Others

Miscellaneous

- Sarcoma (specify type)
- Plasmacytoma
- Lymphoma (specify type)
- Granulocytic sarcoma or leukemic infiltrates
- Adenocarcinoma of rete testis
- Carcinomas and borderline tumours of ovarian type
- Malignant mesotheliomas

From: Mostofi FK, Sobin LH. Histopathological typing of testicular tumours. WHO, Geneva, 1977
Urological Surgical Pathology. Ed. One, Bostwick, Pg. 570

Part 3. Diagnosis, Staging and Prognosis

3.1 Staging Investigations

1. Diagnostic Work Up Pre-Orchidectomy

- History and physical examination
- Chest X-ray
- CBC, LDH, ßhCG, AFP
- Testicular ultrasound

2. Surgical Staging

If testicular cancer is suspected, a urological consultation should be obtained. Needle or incisional biopsy is contraindicated to prevent altered lymphatic drainage. Pathological diagnosis is obtained by a radical inguinal orchidectomy with high ligation of the spermatic cord. Unusual cases such as stage T0 germ cell tumours/extragonadal primaries and stage M1 patients may have elevation of markers or pathological diagnosis from non-testis sites.

3. Peri-operative Staging/Evaluation

- ßhCG, AFP (if elevated preoperatively, must be followed postoperatively weekly until normal)
- CT abdomen and pelvis
- Chest X-ray and/or CT chest
- Sperm count/banking if further therapy required and fertility is a concern

3.2 Pathological Description

Gross description of radical orchiectomy specimens should include:

- The length of spermatic cord attached
- The external dimensions of the testis
- The presence or absence of a mass
- Size of the mass(es)
- The presence of satellite nodules or not
- The texture of all nodules
- The relationship of all nodules to the tunica albuginea, epididymis and cord

Microscopic description should include the following features:

- Enumeration of the cell type(s) present; if more than one cell type is present, some indication should be given of the proportions
- A statement should be made regarding the relationship to the tunica albuginea, tunica vaginalis, rete testis, the epididymis and the spermatic cord
- The presence or absence of lymphatic and/or venous invasion within the testis and within the cord should be commented upon
- The presence of in situ germ cell neoplasia should be noted
- The presence/absence of spermatogenesis in the residual testis should be commented upon

3.3 Staging

TNM Staging Criteria

Staging is based upon anatomic extent of disease and assessment of serum tumour markers.

Primary Tumour (pT)

Assessed on pathologic examination after radical orchiectomy.

pTX Primary tumour cannot be assessed (if no radical orchiectomy has been performed TX is used).

pT0 No evidence of primary tumour (e.g., histologic scar in testis).

pTis Intratubular germ cell neoplasia (carcinoma in situ).

pT1 Tumour limited to testis and epididymis with vascular/lymphatic invasion; tumour may invade tunica albuginea but not tunica vaginalis.

pT2 Tumour limited to testis and epididymis with vascular/lymphatic invasion, or tumour extending through tunica albuginea with involvement of tunica vaginalis.

pT3 Tumour invades spermatic cord with or without vascular/lymphatic invasion.

pT4 Tumour invades scrotum with or without vascular/lymphatic invasion.

Regional Lymph Nodes (N)

- Abdominal para-aortic (periaortic),
- preaortic
- inter-aortocaval
- precaval
- paracaval
- retrocaval
- retroaortic nodes.

Nodes along the spermatic vein should be considered regional. Laterality does not affect the N classification. The intrapelvic nodes and the inguinal nodes are considered regional after scrotal or inguinal surgery.

Clinical

NX Regional lymph nodes cannot be assessed
N0 No regional lymph node metastasis
N1 Metastasis with a lymph node mass 2 cm or less in greatest dimension; or multiple lymph nodes, none more than 2 cm in greatest dimension
N2 Metastasis with a lymph node mass more than 2 cm but not more than 5 cm in greatest dimension; or multiple lymph nodes, any one mass greater than 2 cm but not more than 5 cm in greatest dimension
N3 Metastasis with a lymph node mass more than 5 cm in greatest dimension

Pathologic (pN)

pNx Regional lymph nodes cannot be assessed.
pN0 No regional lymph node metastasis
pN1 Metastasis with a lymph node mass, 2 cm or less in greatest dimension and 5 or fewer positive nodes, none more than 2 cm in greatest dimension
pN2 Metastasis with a lymph node mass, more than 2 cm but not more than 5 cm in greatest dimension; or more than 5 nodes positive, none more than 5 cm; or evidence of extranodal extension of tumour
pN3 Metastasis with a lymph node mass more than 5 cm in greatest dimension

Distant Metastasis

pM Category corresponds to the M category.
M Distant metastasis (including extraregional nodes)
MX Presence of distant metastasis cannot be assessed
M0 No distant metastasis
M1 Distant metastasis
M1a Non regional nodal or pulmonary metastasis
M1b Distant metastasis other than to non regional lymph nodes and lungs

Serum Tumour Markers

Serum markers (alphafetoprotein- AFP, beta human chorionic gonatotropin- ßhCG, and lactate dehydrogenase- LDH) are determined before and immediately following orchiectomy, then serially according to normal decay (AFP t½ = 5-7 days, ßhCG t½ = 24-48 hours) to assess for serum tumour marker elevation. The S classification is based upon the nadir value after orchiectomy.

SX Marker studies not available or not performed
S0 Marker studies within normal limits
S1 LDH < 1.5 x ULN and ßhCG (mIU/mL) < 5000 and AFP (ng/mL) < 1000
S2 LDH = 1.5-10 x ULN or ßhCG = 5,000-50,000 or AFP = 1,000-10,000
S3 LDH > 10 x ULN or ßhCG > 50,000 or AFP > 10,000
(ULN = upper limit of normal for LDH assay)

3.4 TNM Stage Grouping

Stage 0	pTis	N0	M0	S0
Stage I	pT1-4	N0	M0	SX
Stage IA	pT1	N0	M0	S0
Stage IB	pT2 pT3 pT4	N0 N0 N0	M0 M0 M0	S0 S0 S0
Stage IS	Any pT/Tx	N0	M0	S1-3
Stage II	Any pT/Tx	N1-3	M0	SX
Stage IIA	Any pT/Tx Any pT/Tx	N1 N1	M0 M0	S0 S1
Stage IIB	Any pT/Tx Any pT/Tx	N2 N2	M0 M0	S0 S1
Stage IIC	Any pT/Tx Any pT/Tx	N3 N3	M0 M0	S0 S1
Stage III	Any pT/Tx	Any N	M1	SX
Stage IIIA	Any pT/Tx Any pT/Tx	Any N Any N	M1a M1a	S0 S1
Stage IIIB	Any pT/Tx Any pT/Tx	N1-3 Any N	M0 M1a	S2 S2
Stage IIIC	Any pT/Tx Any pT/Tx Any pT/Tx	N1-3 Any N Any N	M0 M1a M1b	S3 S3 Any S

From: American Joint Committee on Cancer, AJCC Cancer Staging Manual, Sixth Edition. Springer-Verlag, 2002

3.5 Prognostic Staging System for Metastatic Germ Cell Tumours

	Non-Seminoma	Seminoma
Good Prognosis	Testis/retroperitoneal primary ***and*** No extra-pulmonary visceral metastasis ***and*** Good markers - all of: • AFP < 1000 ng/mL ***and*** • ßhCG < 5000 IU/L (1000 ng/mL) ***and*** • LDH < 1.5 x ULN 56% of non-seminomas 5 year PFS 89% 5 year survival 92%	Any primary site ***and*** No non-pulmonary visceral metastasis ***and*** • Normal AFP • Any ßhCG • Any LDH 90% of seminomas 5 year PFS 82% 5 year survival 86%
	Non-Seminoma	**Seminoma**
Intermediate Prognosis	Testis/retroperitoneal primary ***and*** No extra-pulmonary visceral metastasis ***and*** Intermediate markers - any of: • AFP > 1000 and < 10,000 ng/mL or • ßhCG > 5000 and < 50,000 IU/L or • LDH > 1.5 x ULN and < 10 x ULN 28% of non-seminomas 5 year PFS 75% 5 year survival 80%	Any primary site ***and*** Non-pulmonary visceral metastasis ***and*** • Normal AFP • Any ßhCG • Any LDH 10% of seminomas 5 year PFS 67% 5 year survival 72%
	Non-Seminoma	**Seminoma**
Poor Prognosis	Mediastinal primary ***or*** Extra-pulmonary visceral metastasis ***or*** Poor markers - any of: • AFP > 10,000 ng/mL or • ßhCG > 50,000 IU/L (10,000 ng/mL) ***or*** • LDH > 10 x ULN 16% of non-seminomas 5 year PFS 41% 5 year survival 48%	No patients classified as poor prognosis

Adapted From: International Germ Cell Consensus Classification: A prognostic factor-based staging system for metastatic germ cell cancers. J Clin Oncol 1997, 15: 594-603

Part 4. Referral Information for the New Patient Visit

A letter of referral and a pathology report documenting the cancer diagnosis are the usual minimal requirements for a referral of adult patients to a tertiary cancer center. A referral need not be delayed due to incomplete results from tests (either due to test scheduling delays or waiting time for test results).

Referral to the Capital Health/QEII Cancer Care Program

Referrals to the Capital Health/QEII Cancer Care Program (CCP) may be faxed to the Referrals Office at 902-473-6079 (tel. 902-473-5140 or 902-473-6098). It is preferred that referrals be accompanied by the CCP Referral form available upon request at the above phone numbers or available for downloading at www.cdha.nshealth.ca/physicianupdate. For urgent or emergent referrals, please page the appropriate specialist on call through the QEII HSC Locating service (902-473-2220) to discuss the referral.

Referral to the Cape Breton Cancer Centre

Referrals to the Cape Breton Cancer Centre may be directed to the referrals/booking office at 902-567-7774 (fax 902-567-7911). For urgent or emergent referrals, please page the appropriate specialist on call through the Cape Breton Regional Hospital Locating service (902-567-8000) to discuss the referral.

Referral to the IWK Health Centre

Pediatric cancers are specifically not covered within this guideline. For adolescent patients, referral calls to the IWK Health Centre may be directed to the pediatric hematologist/oncologist on call at 902-470-8888. For the phone consultation, the following information will be needed: name and age of the patient, parent's phone number, relevant history and physical examination, presumptive diagnosis, and any initial investigation results. Surgical biopsy or other intervention is not recommended until initial contact has been made with the IWK Health Centre pediatric hematologist/oncologist.

A summary of history & physical examination and investigation results can be faxed to 902-470-7208. Further diagnostic investigations will be determined after initial contact and discussion.

Referral Information for Adults

Letter of Referral*

A legible referral or consultation letter highlighting presenting signs and symptoms

Pathology Reports

a. Needle biopsy
b. Orchiectomy specimen
c. Any other diagnostic procedure where a biopsy is taken

Operative Reports (relevant to the cancer- if performed prior to referral)

a. Orchidectomy
b. Other

Diagnostic Imaging Reports*

a. All relevant chest radiographs, including old images*
b. Thoracic, pelvic, abdominal and any other CT scans*
c. Bone scans *
d. Any other relevant diagnostic imaging

Other Information

a. Any relevant consultation reports
b. ßhCG, AFP levels
c. Renal function test results (if done)*
d. Relevant bloodwork (if done)*
e. Detailed information on any previous chemotherapy or radiotherapy of current malignancy
f. Any information on previous malignancies
g. Information on co-existing medical conditions and allergies

* *Specific information which is necessary for proper triage of referrals.*

Note: If the referring physician would like to discuss a case with a specialist, feel free to call the appropriate specialist (Radiation Oncology, Medical Oncology, or Urology, by calling 902-473-2220 at CH/QEII HSC or 902-567-8000 at CBCC or 902-428-8888 at IWK and ask for the specialist on call or a specific physician at this number).

If any tests or reports are pending, the date of the procedure, and the location of the procedure should be noted, so that the reports may be obtained when available. Send in the referral while awaiting these results, to facilitate a timely appointment for your patient.

Part 5. Treatment

All testicular tumours should be treated for cure.

5.1 Management of Pure Seminomas.

All patients should be AFP negative, moderate elevations of LDH or ßhCG are acceptable. Any elevation of AFP pre or postoperatively suggests the presence of non-seminomatous elements, and should be managed as such. Patients with pure seminoma on pathology review without evidence of extratesticular spread on physical examination, Chest X-ray and CT abdomen may receive:

a) **Adjuvant radiotherapy**
Patients receiving postoperative adjuvant radiotherapy should be treated to the peri-aortic, ipsilateral external iliac, left renal hilar & right renal hilar lymph nodes. Where fertility is an issue, the remaining testicle is shielded in conjunction with sperm banking. Standard treatment for Stage I seminomas leads to high control rates of 95%, and with successful salvage for relapse an overall cure rate of about 99%. Patients will require follow-up after treatment (see Part 6 Table 1)

b) **Surveillance**
This may be an option for selected individuals: compliant; accessible for follow-up; low risk for recurrence (N0, tumour <4 cm, no rete testis involvement, no lymphovascular invasion). Surveillance requires regular clinical and radiological assessments (see Part 6 Table 2). Patients should be advised of an average of 18% [range 6 -35%] risk of requiring salvage treatment (radiation or chemotherapy).

Patients with low volume (<5 cm para-aortic nodal mass) abdominal disease should have curative abdominal radiation if there is no evidence of extra-abdominal/extra-nodal disease and/or elevated tumour markers postorchiectomy. Patients with nodal masses <2 cm should be treated with para-aortic plus ipsilateral pelvic irradiation as per N0 disease (above), boosting gross nodal disease. Patients with bulkier, but not advanced (<5 cm), nodal disease should have irradiation to the para-aortic region plus pelvis with a boost to the involved nodes (Appendix I)

Patients with bulky abdominal disease (>5 cm), extra-abdominal disease or visceral disease are treated with primary chemotherapy, with regimens similar to that for non-seminomatous germ cell tumours (see Appendix II). Patients with post-chemotherapy residual masses <3 cm or >90% reduction should be observed. Controversy exists regarding the minority of patients with a residual mass > 3 cm or <90% reduction, and management may include observation, radiation therapy or surgery. These cases should be discussed at the clinical case conference rounds to individualize therapy.

5.2 Management of Nonseminomatous Germ Cell Tumours (With or Without Seminoma)

This includes all histological subtypes, and pathological pure seminomas with any AFP increase or marked elevation of ßhCG.

5.2.1 T1-3 N0 M0 Treatment Options:

a) Surveillance:
Close post orchiectomy surveillance requires that:
i) all staging is unequivocally normal
ii) the patient is considered reliable and available for close follow up including serial CT scans of the retroperitoneum. If surveillance is opted for, follow the schedule in Part 6, Table 3.

b) Retroperitoneal lymph node dissection (nerve-sparing):
This option to preserve the contralateral and, potentially, ipsilateral sympathetic nerves is a surgical technique which allows normal ejaculation in most patients. But, where intraoperative lymphadenopathy is encountered, a full bilateral block dissection should be performed. (See Appendix III)

c) Retroperitoneal lymph node dissection (bilateral):
This option is appropriate in patients for whom fertility is not important or where compliance with surveillance is unrealistic. (See Appendix III)

d) Adjuvant Chemotherapy
Less historical experience but may be an option in very specific circumstances.

5.2.2 T0-4a N1-2 M0

Treatment should be selected to provide the best chance of cure with a single modality as this will minimize morbidity. Early referral for assessment is preferred.

a) Primary chemotherapy is recommended for a retroperitoneal mass over 3 cm; or abnormal/equivocal scan and elevation of tumour markers. (See Appendix II)

b) Radical bilateral retroperitoneal lymph node dissection is an option for patients with minor (<3 cm, including longitudinal axis) lymphadenopathy and negative markers. Postoperative adjuvant chemotherapy is usually advised where complete pathological examination of removed tissue shows tumour >2 cm, >5 nodes or extranodal extension; otherwise close follow up for early detection of relapse and institution of chemotherapy salvage.

5.2.3 T any N0 M1a

Persistent or rising markers post-orchidectomy, CT abdomen negative. Referral for consideration of chemotherapy is required.

5.2.4 T any N2-3 M0; T any N any M1

Chemotherapy with resection of any imagable residual disease on completion. If malignancy is evident in the resected specimen, two further cycles of chemotherapy are required. Patients will require follow-up after treatment (see Part 6, Table 4).

5.3 Recurrent Germ Cell Tumour After Chemotherapy

Relapses of early stage germ cell tumours are uncommon, but even with widespread disease patients are potentially curable. Tumour markers should be repeated and a pathological diagnosis obtained when necessary to confirm the diagnosis. Usually chemotherapy will be the primary treatment for recurrent germ cell tumours, but surgery and/or radiotherapy may also be required, especially for delayed relapses. Given the rarity of these cases, an urgent clinical case conference is needed to discuss individualized treatment.

Part 6. Follow-up Practice Guidelines

Follow-up guidelines have been developed by review of published guidelines and consensus of the Genitourinary Cancer Site Team members, as described in Tables 6-1 to 6-3.

Table 6-1. Seminoma (Post Adjuvant Radiotherapy)

Year	Frequency	Investigations
1-2	q 4 months	History & Physical, Chest X-Ray, AFP, ßhCG
3-5	q 6 months	History & Physical, Chest X-Ray, AFP, ßhCG
6-10	q 12 months	History & Physical, Chest X-Ray, AFP, ßhCG May be followed by family physician or specialist years 6-10

Table 6-2. Seminoma (Surveillance)

Year	Frequency	Investigations
1	q 3 monthly	History & Physical, Chest X-ray, CT scan Abdomen/Pelvis, AFP, ßhCG
2-3	q 6 months	History & Physical, Chest X-Ray, AFP, ßhCG
4-5	q 6 monthly	History & Physical, Chest X-Ray, AFP, ßhCG
6-10	q 12 monthly	History & Physical, Chest X-ray, AFP, ßhCG May be followed by family physician or specialist years 6-10
11-16	q 24 monthly	History & Physical, Chest X-ray, AFP, ßhCG May be followed by family physician or specialist
Patients treated for stage II or greater disease should have follow-up CT surveillance of involved areas.		

Table 6-3. Non-Seminoma (Surveillance)		
Year	**Frequency**	**Investigations**
1	q 1 monthly q 3 monthly	History & Physical, AFP, ßhCG CT Chest/Abdomen/Pelvis
2	q 2 monthly q 6 monthly	History & Physical, AFP, ßhCG CT Chest/Abdomen/Pelvis
3	q 3 monthly q 6 monthly	History & Physical, Chest X-Ray, AFP, ßhCG CT Abdomen/Pelvis
4-5	q 6 monthly q 12 monthly	History & Physical, Chest X-Ray, AFP, ßhCG CT Abdomen/Pelvis
Thereafter	q 12 monthly	History & Physical, Chest X-Ray, AFP, ßhCG
Follow-up after years 5 can be done by the family physician		

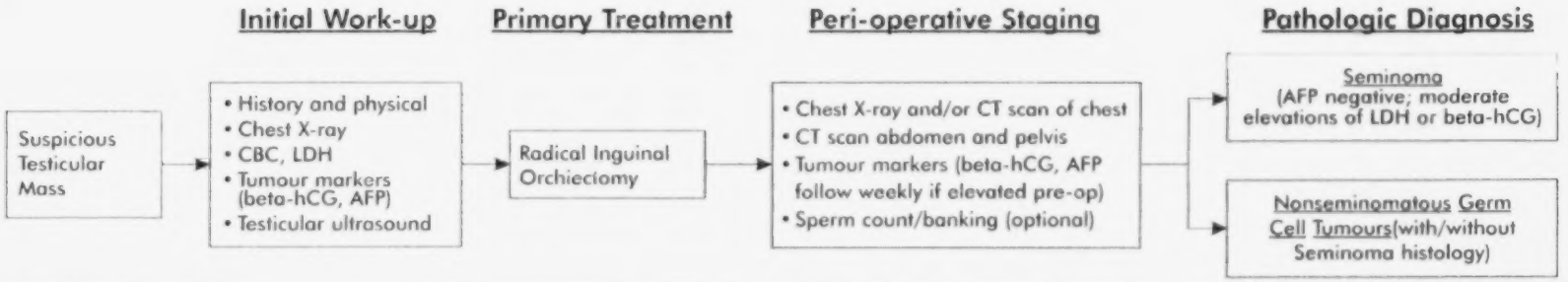
Table 6-4. Non-Seminoma (Post Chemotherapy)		
Year	**Frequency**	**Investigations**
1	q 2 monthly	History & Physical, Chest X-Ray, AFP, ßhCG
2	q 4 monthly	History & Physical, Chest X-Ray, AFP, ßhCG
3-5	q 6 monthly	History & Physical, Chest X-Ray, AFP, ßhCG
Thereafter	q 12 monthly	History & Physical, Chest X-Ray, AFP, ßhCG
Follow-up after year 5 can be done by the family physician, but any symptoms which could be a long-term toxicity event (to chemotherapy or radiotherapy) should be referred back to the specialist.		

Part 7. Supportive Care Issues

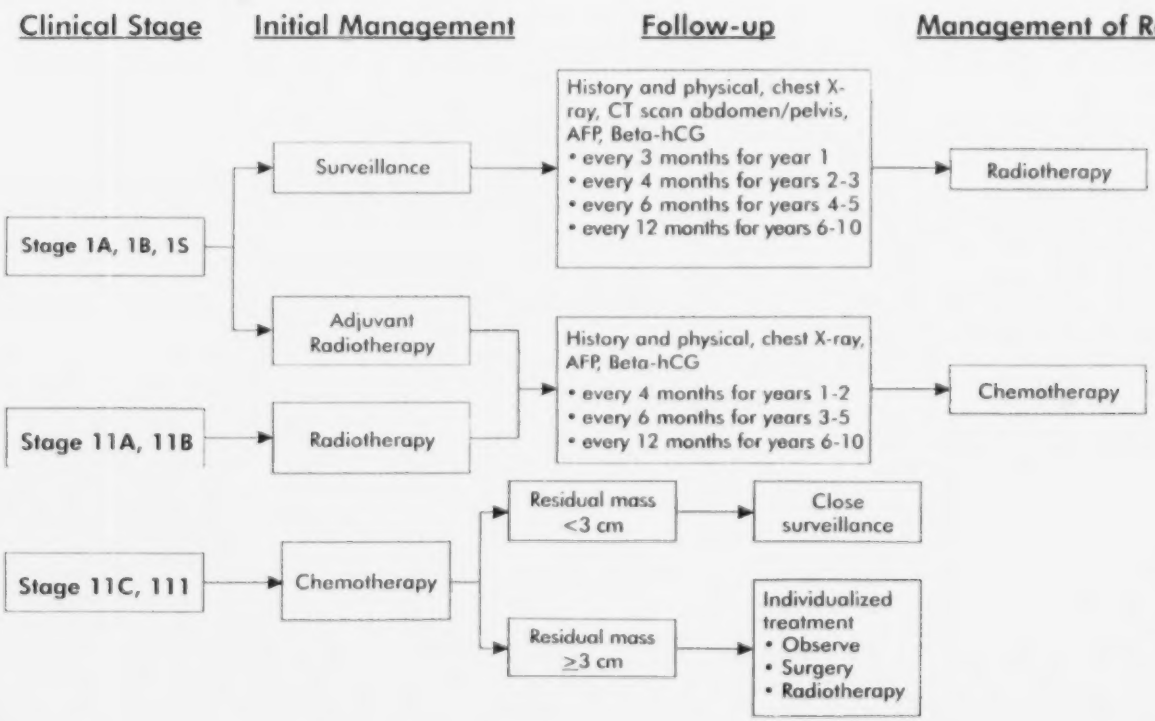
Supportive Care issues are as important in the care of a cancer patient as the actual treatment. Each patient should be regularly assessed for emotional concerns and if necessary, referred to the appropriate professional. The GU Site Team will be developing supportive care guidelines specific to testicular cancer in the future.

Pain and symptom management is also important. The Supportive Care Cancer Site Team of *Cancer Care Nova Scotia* is in the process of developing guidelines for nausea and vomiting, oral care and pain control.

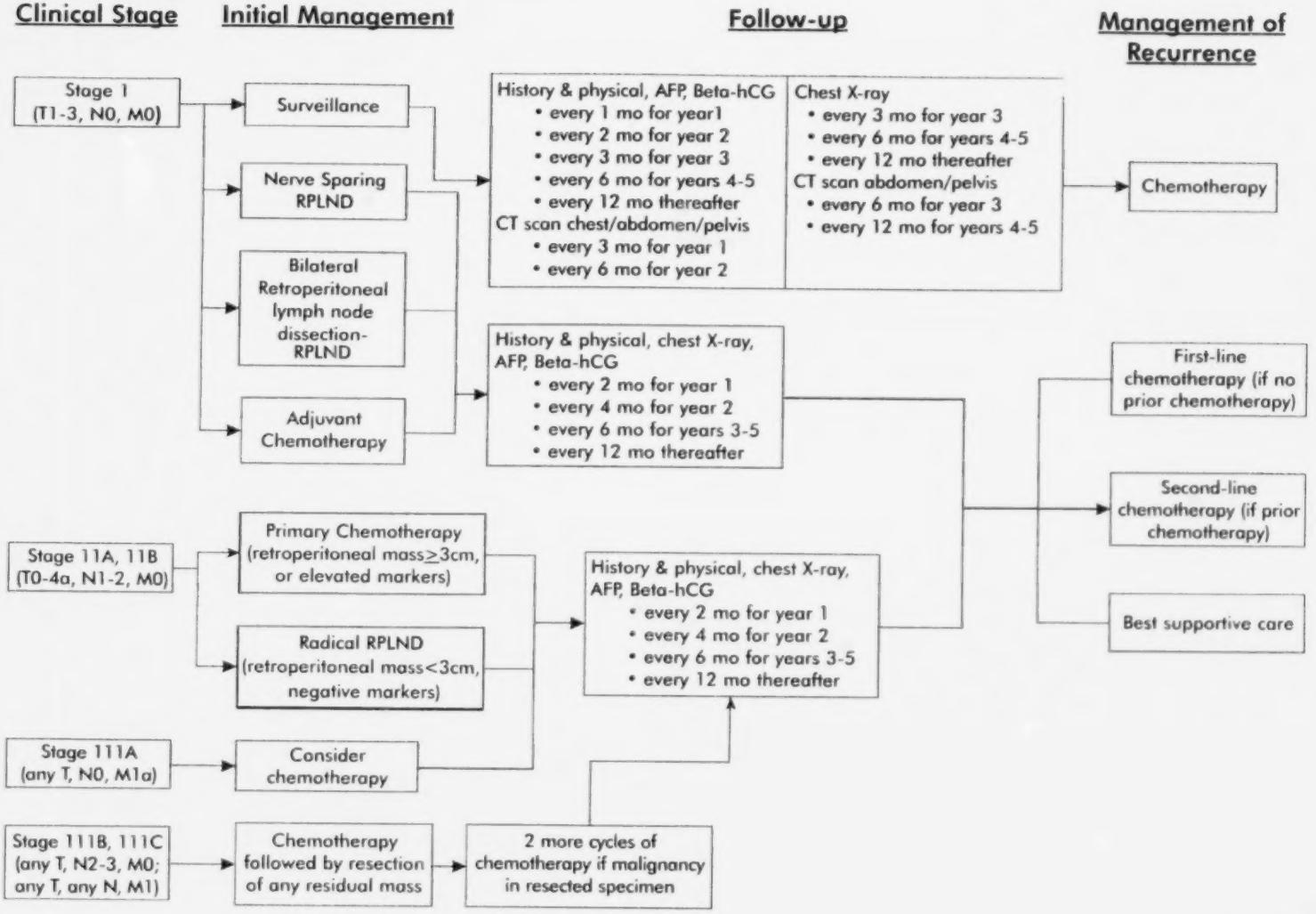
Part 8. Practice Pathway for the Management of Testicular Cancer


Initial Work-up
Primary Treatment
Peri-operative Staging
Pathologic Diagnosis
Suspicious Testicular Mass
• History and physical
• Chest X-ray
• CBC, LDH
• Tumour markers (beta-hCG, AFP)
• Testicular ultrasound
Radical Inguinal Orchiectomy
• Chest X-ray and/or CT scan of chest
• CT scan abdomen and pelvis
• Tumour markers (beta-hCG, AFP follow weekly if elevated pre-op)
• Sperm count/banking (optional)
Seminoma (AFP negative; moderate elevations of LDH or beta-hCG)
Nonseminomatous Germ Cell Tumours(with/without Seminoma histology)

Seminoma Management



Non-Seminomatous Germ Cell Tumour Management


Clinical Stage
Initial Management
Follow-up
Management of Recurrence
Stage 1 (T1-3, N0, M0)
Surveillance
Nerve Sparing RPLND
Bilateral Retroperitoneal lymph node dissection-RPLND
Adjuvant Chemotherapy
History & physical, AFP, Beta-hCG
• every 1 mo for year1
• every 2 mo for year 2
• every 3 mo for year 3
• every 6 mo for years 4-5
• every 12 mo thereafter
CT scan chest/abdomen/pelvis
• every 3 mo for year 1
• every 6 mo for year 2
Chest X-ray
• every 3 mo for year 3
• every 6 mo for years 4-5
• every 12 mo thereafter
CT scan abdomen/pelvis
• every 6 mo for year 3
• every 12 mo for years 4-5
Chemotherapy
History & physical, chest X-ray, AFP, Beta-hCG
• every 2 mo for year 1
• every 4 mo for year 2
• every 6 mo for years 3-5
• every 12 mo thereafter
First-line chemotherapy (if no prior chemotherapy)
Second-line chemotherapy (if prior chemotherapy)
Best supportive care
Stage 11A, 11B (T0-4a, N1-2, M0)
Primary Chemotherapy (retroperitoneal mass≥3cm, or elevated markers)
Radical RPLND (retroperitoneal mass<3cm, negative markers)
History & physical, chest X-ray, AFP, Beta-hCG
• every 2 mo for year 1
• every 4 mo for year 2
• every 6 mo for years 3-5
• every 12 mo thereafter
Stage 111A (any T, N0, M1a)
Consider chemotherapy
Stage 111B, 111C (any T, N2-3, M0; any T, any N, M1)
Chemotherapy followed by resection of any residual mass
2 more cycles of chemotherapy if malignancy in resected specimen

Part 9. Guideline Development Process

The Genitourinary (GU) Cancer Site Team of *Cancer Care Nova Scotia* developed this guideline through consensus using current literature and guidelines developed at other Canadian centres.

The final draft of the guideline was circulated to all oncologists, urologists and Chiefs of Pathology in Nova Scotia, New Brunswick and Prince Edward Island for their review and comments. GU team members and oncologists in Nova Scotia known not to treat testicular cancer were excluded from the survey. Comments were anonymously received from 18 respondents (20% response rate). Their comments were carefully considered and appropriate changes were made. The responses to key questions from the survey can be found at the end of this section. The GU team would like to thank everyone who took the time to review the draft guideline and return the survey.

The approved guideline will be circulated in hard copy to all oncologists and urologists as well as to the cancer chemotherapy clinics, regional hospital pharmacies and Chiefs of Pathology in Nova Scotia. Copies will also be made available to oncologists and urologists in Prince Edward Island and New Brunswick. Others who are interested may request hard copies by contacting *Cancer Care Nova Scotia* at 1-866-599-2267. The approved guideline will also be available on the *CCNS* Web Site (www.cancercare.ns.ca).

The guideline will be reviewed three years after approval or revised as necessary before then as new evidence becomes available. The most recent version of this guideline will always be available on the *CCNS* Web Site.

The development of this guideline was funded indirectly by *CCNS* via a stipend for the GU Cancer Site Team's operations. *CCNS* staff also support the guideline development process. *CCNS* directly funded the design, printing and dissemination of the guideline survey as well as the approved guideline. The views and interests of *CCNS* have not influenced the GU Cancer Site Team's recommendations in this guideline.

9.1 Key Results from Survey Review

88 questionnaires mailed to all urologists, medical and radiation oncologists and Chiefs of Pathology in NS, NB, PEI.

8 surveys returned "Not delivered"

18 surveys completed and returned

18/80 (22% response rate)

Respondents by Specialty and Province

	NB	NS	PEI	No Province Identified	Total and Percent
Urology	1	4		1	6 (33%)
Medical Oncology	2		1		3 (17%)
Pathology	1	4	1		6 (33%)
Radiation Oncology	3				3 (17%)
Total and Percent	7 (38%)	8 (44%)	2 (11%)	1 (0.5%)	18 (100%)

Q1 Is the guideline relevant to your practice?

Total Responses 15 Yes 12
No 3

Q2 A guideline on this topic will be useful to clinicians

Total Response 15 Strongly Agree 8
Agree 7

Q3 I agree with the guideline

Total Response 15 Strongly Agree 7
Agree 8

Q6 Would you use this guideline in your own practice?

Total Response 17 Yes 17

Q7 In your opinion, this guideline should be disseminated to all appropriate practitioners in Nova Scotia

	Yes	No	Unsure
Total Response 17	15	1	1

Guideline Development Process

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Appendix I Radiotherapy Guidelines

Stage I Seminoma:

The radiation oncologist may recommend a surveillance protocol for patients who have no risk factors, that is:

- primary tumour < 4 cm
- no rete testis involvement
- no lymphovascular invasion

In these cases, there is about a 6% chance of failure on the observation protocol. For all other patients, we will recommend adjuvant periaortic and ipsilateral pelvic radiation.

Technical Guidelines Stage I Seminoma Radiation:

Patients are treated with the bladder empty and with a scrotal shield if they want to preserve their fertility. The scan parameters for radiation therapy simulation are from T8 to the bottom of the obturator foramen.

The target volume is the para-aortic lymph nodes from the T12 vertabrae, as well as the ipsilateral external iliac lymph nodes. The lymph nodes in the left renal hilum will be covered in all patients whereas the lymph nodes in the right renal hilum are to be encompassed if it was a right-sided primary tumour.

The radiation oncologist will outline both kidneys, bladder and the blood vessels associated with the target lymph nodes. The isocentre will be chosen halfway between the estimated inferior and superior extended fields and placed approximately centered between the right and left borders at the mid-separation.

The superior field borders will be the T10-T11 interspace. The inferior border will be at the top of the obturator foramen. The lateral fields will coincide with the maximum extent of the autoblock. The technique is anterior - posterior with individualized shielding on both fields. The autoblock will be set 18 mm from the edge of the target (blood vessels). The shields will be modified around the kidneys to provide a 1 cm margin around the target blood vessels/lymph nodes.

The dose is 25 Gy in 20 fractions prescribed at the mid-separation/isocentre.

Patients with Stage IIA/B Disease:

These patients will be treated with initial radiation portal with an "Inverted Y" field to 2500 cGy in 20 fractions. These patients will receive an additional 10 Gy in 5 fractions using an APPA technique, boosting the pre-radiation lymph node volume with a 1.5 cm margin to block edge.

Appendix II Chemotherapy Regimens

Previously Untreated - Good Prognosis

CISP-ETOP x 4 cycles or BEP x 3 cycles q 21 days

CISP-ETOP

Etoposide	100 mg/m^2 IV daily X 5 days
Cisplatin	20 mg/m^2 IV daily X 5 days

BEP

Etoposide	100 mg/m^2 IV daily X 5 days
Cisplatin	20 mg/m^2 IV daily X 5 days
Bleomycin	30 units IV weekly on days 2, 9, 16

Previously Untreated - Intermediate and poor prognosis

BEP x 4 cycles q 21 days

BEP

Etoposide	100 mg/m^2 IV daily X 5 days
Cisplatin	20 mg/m^2 IV daily X 5 days
Bleomycin	30 units IV weekly on days 2, 9, 16

Previously Treated - First Line Salvage Therapy

ICE or VIP q 21 days

ICE

Ifosfamide	1.2 g/m^2 IV daily X 5 days
Mesna	400 mg/m^2 IV every 8 hours X 5 days
Cisplatin	20 mg/m^2 IV X 5 days plus
Etoposide	100 mg/m^2 IV daily X 5 days

VIP

Ifosfamide	1.2 g/m^2 IV daily X 5 days
Mesna	400 mg/m^2 IV every 8 hours X 5 days
Cisplatin	20 mg/m^2 IV X 5 days plus
Vinblastine	0.11 mg/Kg IV on days 1 & 2

Note: IV = intravenous
(see the Systemic Therapy Manual for Cancer Treatment)

Appendix III Retroperitoneal Lymph Node Dissection Guidelines

Stage I:

Nerve sparing is the preferred technique for patients with grossly negative lymph nodes. For left-sided tumours, the upper limit of the dissection is the renal vessels, the lateral limit is the left ureter, the medial limit is the medial border of the cava from the renal vessels to the inferior mesenteric artery, and the left iliac artery down to where the left ureter crosses the iliac vessels. For right-sided tumours, the upper limit of the dissection is the renal vessels, the lateral limit is the right ureter, the medial limit is the medial border of the aorta from the renal vessels to the inferior mesenteric artery and the right iliac artery down to where the right ureter crosses the iliac vessels. The ipsilateral spermatic cord should always be removed with the specimen.

Stage IIA:

The template dissection is the preferred technique for patients with positive CTs and/or grossly abnormal lymph nodes. For left-sided tumours, the upper limit of the dissection is the renal vessels, the left lateral limit is the left ureter, the right lateral limits are the right ureter from the renal vessels to the inferior mesenteric artery, and, below this level, the left iliac artery down to where the left ureter crosses the iliac vessels. For right-sided tumours, the upper limit of the dissection is the renal vessels, the right lateral limit is the right ureter, the left lateral limits are the renal vessels to the inferior mesenteric artery and, below this level, the right iliac artery down to where the right ureter crosses the iliac vessels. Preservation of the postganglionic sympathetic nerve fibres overlying the aorta, particularly L3-L4, can be attempted if a complete removal of the nodal packages is possible. If the abnormal nodes are not included in these nodal packages, the dissection should be extended accordingly.

Stage IIB and Postchemotherapy Residual Masses:

Full bilateral dissection is the preferred technique. In these patients, the upper limit of the dissection is at the renal vessels, the lateral limits are both ureters, the inferior limit on the side of the testicular tumour is where the ipsilateral ureter crosses the iliac vessels. On the contralateral side, the inferior limit is at the origin of the inferior mesenteric artery. As with stage IIA, preservation of the postganglionic sympathetic nerve fibres can be attempted, and if the abnormal nodes are not included within the described limits, the dissection should be extended accordingly.

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